WHAT WE CLAIM IS:

1. An optical element having at least one entrance refracting surface and at least one exit refracting surface, said optical element being formed from an organic-inorganic composite material.

2. An optical element according to claim 1, wherein said organic-inorganic composite material consists essentially of an organic phase and an inorganic phase dispersed in a three-dimensional network (matrix) of the organic phase.

3. An optical element according to claim 2, wherein the organic phase of said organic-inorganic composite material is formed from a mixed material of an organic polymer and a glass precursor.

4. An optical element according to claim 2, wherein said organic-inorganic composite material has covalent bonding between the organic phase and the inorganic phase.

5. An optical element according to claim 2, wherein said inorganic phase dispersed in the three-dimensional network of the organic phase has a micro structure not larger than 100 nanometers in size.

6. An optical element according to claim 2, wherein the inorganic phase of said organic-inorganic composite material is formed from a metallic compound.

7. An optical element according to claim 1, which is formed by injection-molding said organic-inorganic composite material.

8. An optical element according to claim 1, wherein

at least two transmitting surfaces of said optical element have an optical power.

9. An optical element according to claim 8, which has at least one reflecting surface, wherein when a light ray passing through a center of an object and a center of a stop is defined as an axial principal ray, said axial principal ray is bent in said organic-inorganic composite material.

10. An optical element according to claim 9, wherein said at least one reflecting surface has an optical power.

11. An optical element according to claim 9, wherein said at least one reflecting surface has a rotationally asymmetric surface configuration that corrects decentration aberrations due to decentration.

12. An optical element according to claim 9, which has at least two reflecting surfaces, wherein at least one of said at least two reflecting surfaces has a rotationally asymmetric surface configuration that corrects decentration aberrations due to decentration.

13. An optical element according to claim 12, which has two reflecting surfaces, wherein the entrance refracting surface and the exit refracting surface are disposed to face each other so that the axial principal ray passes along a substantially round-trip optical path.

14. An optical element according to claim 12, wherein the entrance refracting surface and the exit refracting surface are placed adjacent to each other so that the axial principal ray passes along a substantially

intersecting optical path.

15. An optical element according to claim 1, which is positioned in a vicinity of a stop of an optical system.

16. An optical element according to claim 1, which is positioned in a vicinity of an object or an image plane.

17. An optical element according to claim 1, wherein the following condition is satisfied:

$$\nu > -195n + 352.5 \quad \cdots(1)$$

where n is a refractive index for the spectral d-line of said organic-inorganic composite material and ν is an Abbe's number thereof.

18. An optical element according to claim 1, wherein the following condition is satisfied:

$$\nu > -175n + 326 \quad \cdots(2)$$

where n is a refractive index for the spectral d-line of said organic-inorganic composite material and ν is an Abbe's number thereof.

19. An optical element according to claim 17, wherein the following condition is satisfied:

$$20 < \nu < 65 \quad \cdots(3)$$

20. An optical element according to claim 17, wherein the following condition is satisfied:

$$1.6 < n < 1.9 \quad \cdots(4)$$